Ain Shams University

Faculty Of Engineering

Report subject : Evaluation task for Automotive Embedded Autonomous Applications project

Team members:

Beshoy Anwar Mlk

Boula Nashat Thabet

Menna’t-allah Mohamed Abdallah

Mina Talaat Hakeem

Mina Rizk-Allah Isac

Peter Rateb Mamlouk

-Technical discussion:

We've used OpenCV to convert a video into frames and then applied object detection tensorflow model on each frame and convert the output frames back into a video using OpenCV.

Hardware and software specs:

Laptop: Lenovo Legion Y520

Linux Distro: Ubuntu 16.04 LTS x64

CUDA Toolkit: 9.0

NVIDIA cuDNN: 7.2.1

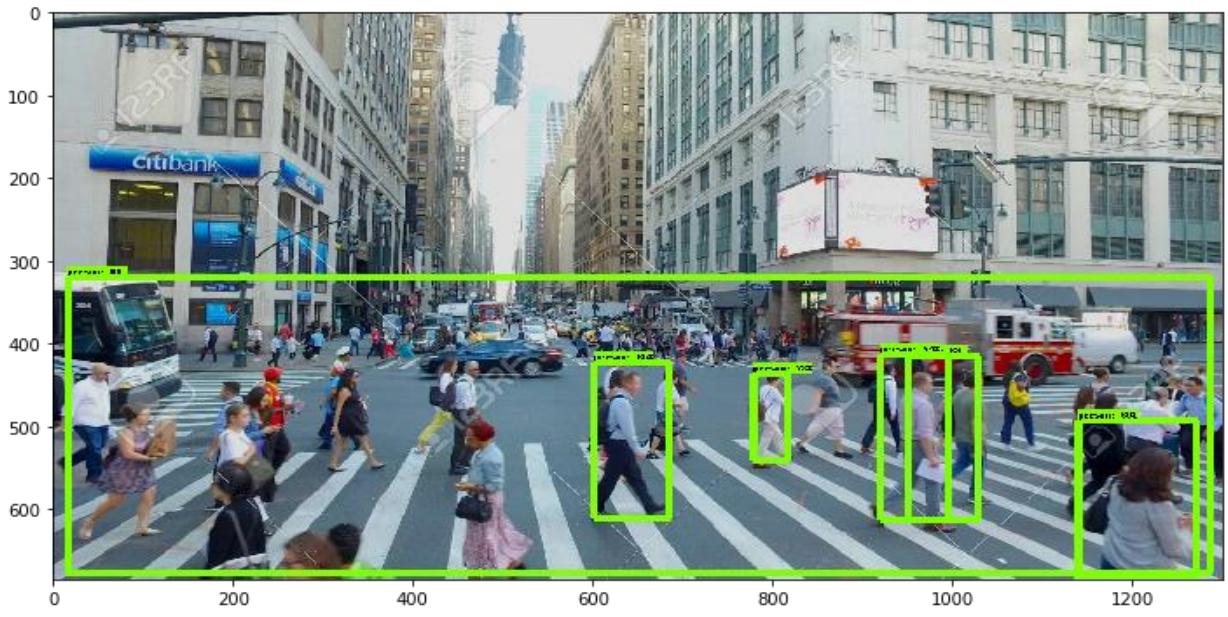
OpenCV: 3.4.3

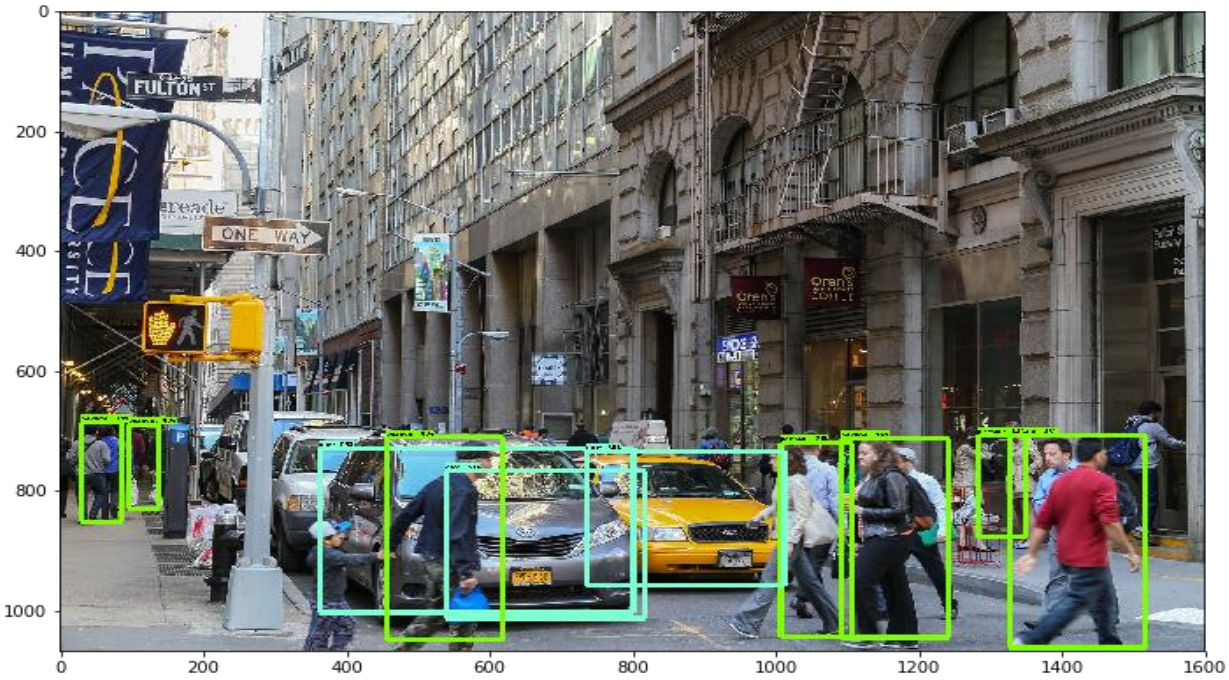
Tensorflow: 1.10.1

Tensorflow Models: @git-commit 17fa52864bfc7a7444a8b921d8a8eb1669e14ebd

CMake: 3.10.2

-Screenshots:

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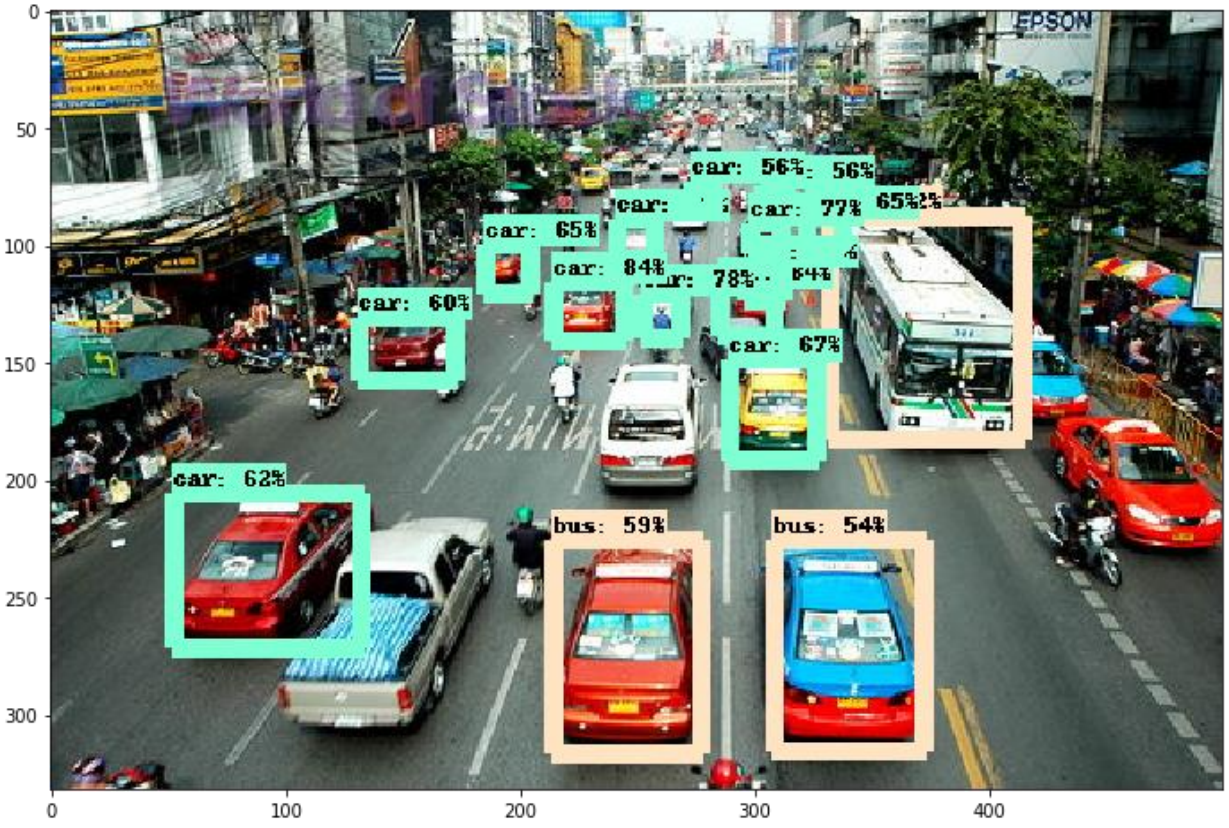
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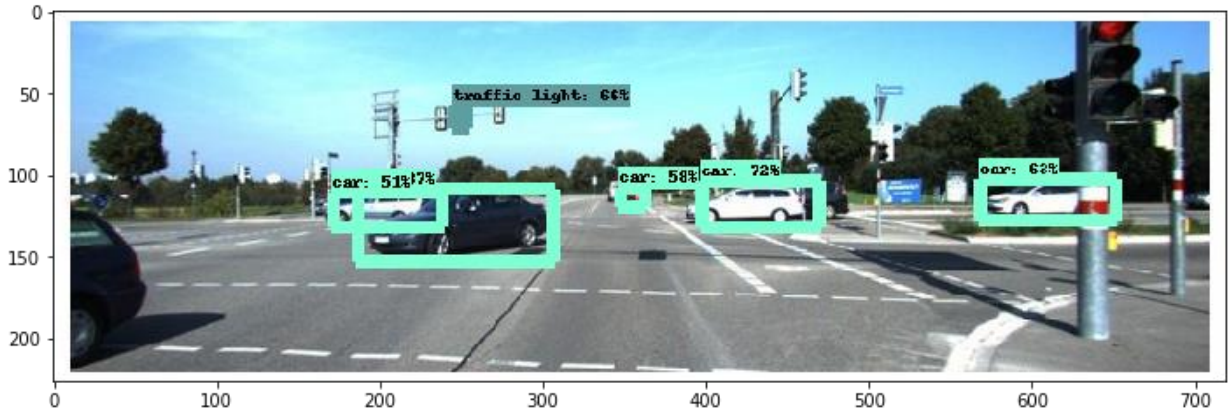

-The edited code:

1)This part is used for converting the video into frames

```
vidcap = cv2.VideoCapture(in_vid)
CV_CAP_PROP_FPS = 5
vidcap.set(CV_CAP_PROP_FPS, 10)
success, image = vidcap.read()
frames = 0
while success:
    vidcap.set(cv2.CAP_PROP_POS_MSEC,(frames*100))
    cv2.imwrite(test_frames + '/frame%d.jpg' % frames, image)
    success, image = vidcap.read()
    frames += 1
print('frames: {}'.format(frames))
```

2)This part will combine the output frames of object-detection-tensorflow-algorithm to create the output video

```
fps = 10.0
frame_array = []
files = [f for f in os.listdir(out_frames) if isfile(join(out_frames, f))]
files.sort(key = lambda x: int(x[5:-4]))
for i in range(len(files)):
    filename = out_frames + files[i]
    img = cv2.imread(filename)
    height, width, layers = img.shape
    size = (width, height)
    frame_array.append(img)
out = cv2.VideoWriter(out_vid, cv2.VideoWriter_fourcc(*'DIVX'), fps, size)
for i in range(len(frame_array)):
    out.write(frame_array[i])
out.release()
```

-GitHub link for code:

https://github.com/ETBMina/ObjectDetectionEvaluationTask

-YouTube link for video output:

https://youtu.be/6QRXnvNmxdg